MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 3, 2017/2018

PMT0104 – FUNDAMENTAL MATHEMATICS I

(All sections / Groups)

4 JUNE 2018
9.00 a.m. – 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **FOUR (4)** printed pages including the cover page with 4 questions only.
2. Answer all **FOUR (4)** questions
3. Write all your answers in the answer booklet provided.
4. Only NON-PROGRAMMABLE calculator is allowed.

Question 1 (25 Marks)

a) Express the answer as a single polynomial.

i. $7(2x^3 + x^2 - 1) - 9(9x^3 - 4x + 2)$ **(4 marks)**

ii. $4x(x + 4)(x - 5)$ **(3 marks)**

b) Solve the following in the lowest form.

$$\frac{\frac{2}{x+7} + \frac{4}{x+3}}{\frac{3x+17}{x^2+10x+21}}$$ **(8 marks)**

c) Write the expression in standard form $a + bi$.

$$\frac{2+3i}{3-2i} + \frac{7+7i}{9-8i}$$ **(10 marks)**

Question 2 (25 Marks)

a) Solve the equation.

i. $(x + 9)(x - 1) = (x + 1)^2$ **(4 marks)**

ii. $\sqrt{16x - 16} = x + 3$ **(6 marks)**

iii. $|3(x + 1) + 6| = 15$ **(4 marks)**

b) Solve the following quadratic equations by using quadratic formula. **(5 marks)**

$$4x^2 + 10x + 3 = 0$$

c) Solve the inequalities and give the answer in interval notation.

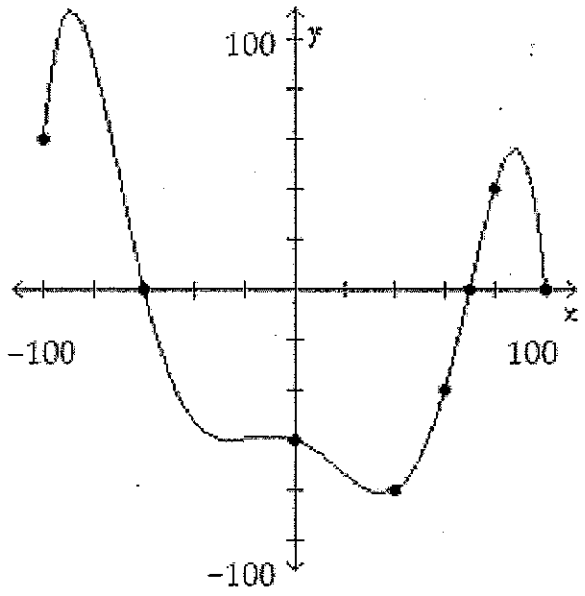
i. $-12 \leq -3x + 3 \leq -6$ **(3 marks)**

ii. $|x - 2| + 3 < 8$ **(3 marks)**

Continued...

Question 3 (25 Marks)

a) Consider the following graph.



i. Find the intercepts. **(2 marks)**
ii. What is the value of x when $f(x) = 60$? **(2 marks)**
iii. List the value(s) of $f(x)$ when $x > 0$. **(2 marks)**

b) Graph the function by starting with basic graph. Show all the transformations.

$$(x+1)^2 - 4$$ **(8 marks)**

c) Factor the following:

$$2(x+6)(x-5)^3 + 6(x+6)^2(x-5)^2$$ **(3 marks)**

d) Find the remainder of the following polynomial by using given method

$x^5 - 2x^4 - 13x^3 - 8x^2 - 7x - 14$ divided by $x - 5$

i. synthetic division **(5 marks)**
ii. Remainder Theorem **(3 marks)**

Continued...

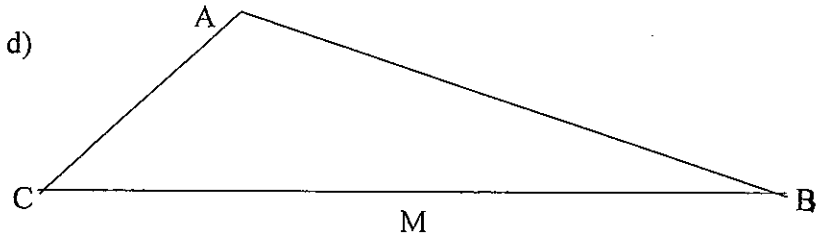
Question 4 (25 Marks)

a) Write the first six term of the sequence.
   i. $\{2(2n-3)\}$ **(3 marks)**
   ii. $\{n^2-n\}$ **(3 marks)**

b) Find sum of the following arithmetic series
$$2+4+6+\cdots+1730$$ **(6 marks)**

c) Find the slope containing points $(1,-9)$ and $(-5,8)$. Thus, find an equation of straight line that passing through the points. **(6 marks)**

d)



Given points $A(5,4)$, $B(3,2)$ and $C(10,2)$. Find
i. midpoint, M of point A and B. **(3 marks)**
ii. distance between point A and M **(4 marks)**

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